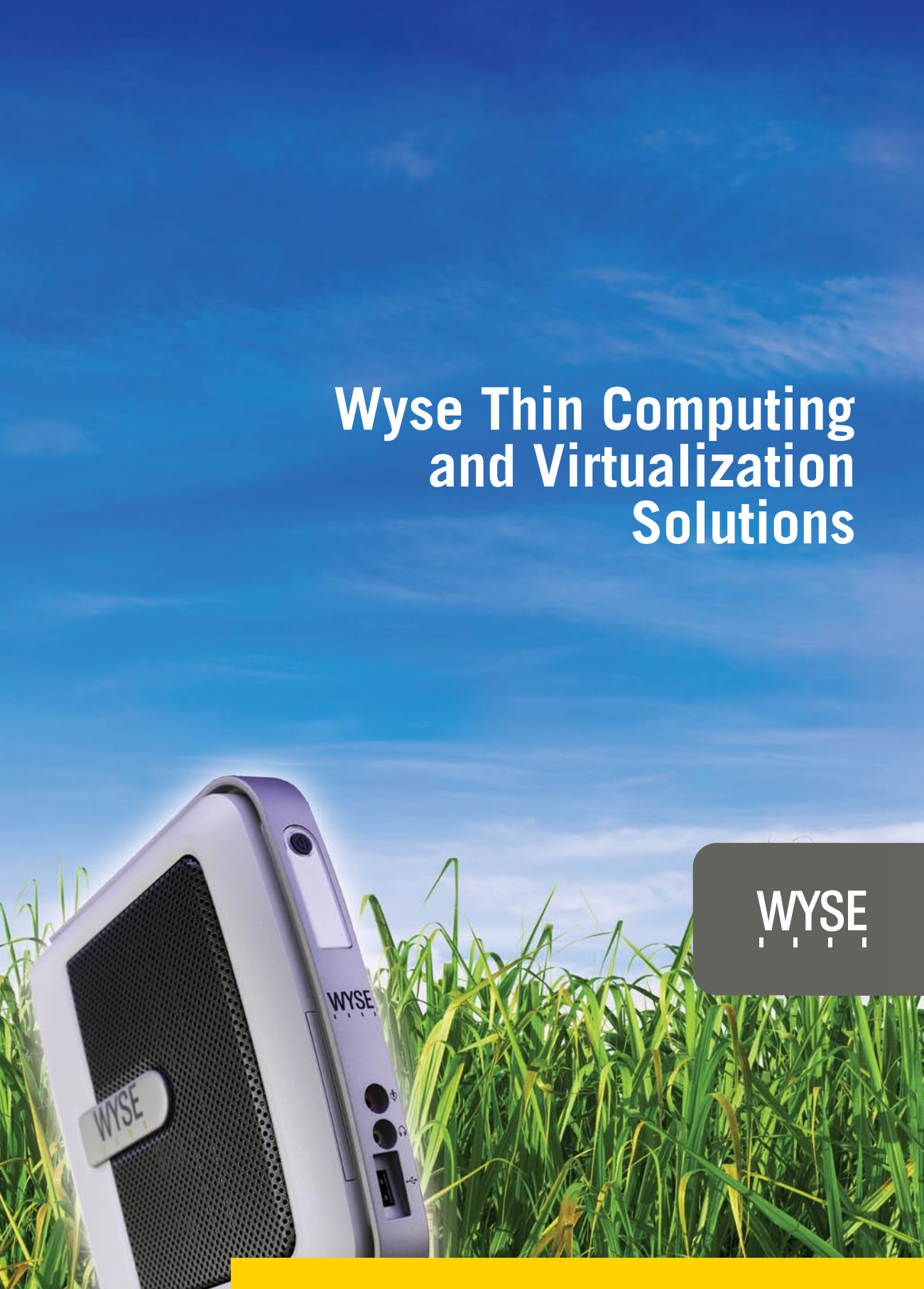
Wyse Thin Computing and Virtualization Solutions



For many, it's become impractical to run a business on personal computers today. If they're not locked down, PCs can be fraught with problems, from being attractive to thieves to being easily infected with viruses and worse. That's why, in enterprises of all shapes, sizes, and markets, thin computing, using cloud computing or virtualization with simpler, appliance-like user devices is making a big impact. It's more secure, more available, more reliable, more manageable, more scalable, and offers a better ROI and lower TCO than PCs. In fact, analysts have suggested that thin computing TCO can be half that of a traditional unmanaged PC environment.

WHAT'S THIN COMPUTING?

Thin Computing is the use of a powerful datacenter focused strategy like Cloud Computing or Client Virtualization (using Citrix© XenApp, XenDesktop ,VMware View, Microsoft® Windows Remote Desktop Services or Terminal Services, Hyper-V, UNIX/Linux, or HTML applications) accessed by simpler, more energy-efficient desktop or mobile appliances, instead of a traditional PC. This proven model delivers the productivity people need, at a lower cost than traditional methods, all while dramatically improving security and manageability. Analysts agree, replacing a PC environment with thin computing (thin clients and required datacenter infrastructure) will reduce energy consumption by 70 to 90%. It's the most effective Green IT strategy.

THE FIVE VALUE POINTS OF THIN COMPUTING

A thin computing strategy consists of some or all of these five areas, which we'll cover here:

1. Datacenter Strategy
2. Client Devices
3. Provisioning Software
4. Management Software
5. Virtualization Software

DATACENTER STRATEGY

Presentation Virtualization

Presentation Virtualization is a cost-efficient way, using software such as Citrix XenApp or Microsoft Remote Desktop Services or Terminal Services, to deliver access to centrally stored information from anywhere. A server or server farm processes applications and information, sending screens to the thin client desktop over a network connection so that it appears to the worker as though everything were executing locally. These solutions enable IT to deliver applications such as Microsoft Office, SAP, and Oracle to the desktop, rather than installing them at each desk. With this approach, applications run simultaneously on the server, with each workers session isolated from one another. Presentation Virtualization typically works well for more than 80 percent of a company's applications. Thin clients are an ideal endpoint for this solution, as complexity typically found in PCs is shifted to the datacenter, where it can be more effectively managed, enabling employees to focus on their work and be more productive.

Client Virtualization

Client Virtualization, or Virtual Desktop Infrastructure or VDI, is a recent development in thin computing. It's an adaptation of virtualized server technology. Using enterprise virtualization products like Citrix XenDesktop, VMware View, and Microsoft Hyper-VDI, a hypervisor runs on the server hardware and manages multiple virtual machines within the server, with each virtual machine containing a user's workload, their operating system and applications. This workload is accessed using a thin client, and modern protocols, (including Citrix HDX, Microsoft RDP and RemoteFX (when available), and VMware View with PCoIP) deliver an experience like a standard PC. Client Virtualization allows an OS, like Microsoft Windows, to execute in its own dedicated virtual machine on the server. In this way, no two people's applications can conflict with one another. What's more, with desktop environments consolidated within the data center, organizations can deliver secure, isolated desktops that are always on, and securely accessible from anytime and any device. Each thin client displays the environment to the user, is centrally managed and can be placed anywhere on the network. Client Virtualization typically delivers complete application compatibility.

OS and Application Virtualization (Streaming)

OS and Application Streaming is a powerful third option in virtualization. While the Presentation Virtualization and Client Virtualization applications are typically executed on the server and display on the client endpoint, in OS and Application Virtualization via Streaming, the OS, applications, and data are stored at the datacenter, and sent over the network in real-time to be executed on the endpoint device, as they are with a PC. The value of this model is that it takes the hard disk drive out of the endpoint, moving storage to the datacenter, and making security, control, and OS and application maintenance vastly simpler. Software is delivered for execution on the desktop in real time, with performance capabilities equal to today's PCs, but with far lower costs, datacenter and infrastructure requirements.

Cloud Computing

Cloud computing uses web technologies or those mentioned above to host applications in a private (inside your building) or public (on the Internet) datacenter, accessing them over a private network, or a secure channel over the Internet. Using private and public clouds has the potential to make business and personal application access ubiquitous, and accessible from the office, home, road, or your hand, with a thin client device or software. In your cloud, you can choose presentation virtualization, VDI, or a combination of both, using powerful solutions from Citrix, VMware, Microsoft, and others. Public cloud technologies are already available from Google, Amazon, Microsoft, and others. Accessing these clouds doesn't require a PC, in fact, a PC may be overkill for many applications.

THIN COMPUTING MODEL COMPARISON

	Presentation	VDI	Streaming	Web
	Storage Management Shared Execution; Display Light Management	Storage Management Isolated Execution; Display Light Management	Storage Management; Execution	Display
Datacenter/ control point	Cloud, Microsoft Terminal Services, Citrix XenApp	Cloud, Microsoft Hyper-V, Citrix XenDesktop, VMware View	Citrix Provisioning Server, Wyse WSM, IBM FSC	Web Server
Execution	Centralized	Centralized	Distributed	Centralized
Benefits	User density and TCO	App compatibility and OS flexibility	Experience of PC, control of Thin Computing	No Data Center Required

Wyse Client Devices
Wyse Client Operating Systems

CLIENT DEVICES

Thin Clients are a core component of thin computing. They improve on the PC paradigm by centralizing management, data, and sometimes execution to enforce security initiatives, reduce costs by simplifying management, deployment, and increasing reliability and life cycle. In essence, thin clients shift computing complexity to the datacenter, where it can be managed by professionals. This approach has been proven to increase user productivity by eliminating such break-fix activities as HDD replacements, crashes, memory upgrades, virus outbreaks, and more.

DESKTOP THIN CLIENTS

If your users operate from a stationary office, Wyse offers desktop clients optimized for these virtualization environments, so you can find the solution that best fits your needs. For more information than we can present here on the different operating systems and solutions, please visit our web site at wyse.com today. Desktop units offer a broad range of mounting options for any work environment via an innovative mounting system that allows the unit to be conveniently attached to a wall, desk, or in any space-constrained environment. The following operating system descriptions introduce you to the broad spectrum of uses for desktop thin clients, enabling you to choose the model that fits the target environment best.

Wyse ThinOS™

When you need optimized performance and simplicity, choose the ultra-fast Wyse ThinOS. These stateless clients are tailored to deliver out-of the-box, install-and-run simplicity. Wyse ThinOS offers the utmost security and protection from viruses and malicious software because the software does not have a local web browser or publicly exposed API that can be exploited by hackers, and no data is stored on the device. Datacenter connectivity is achieved using RDP and HDX protocols. Wyse ThinOS clients boot faster than any competing device, are self managing, and automatically and centrally configured.

The Wyse S10™ and more powerful C10LE™ thin clients are some of the smallest thin clients on the market. The functional and compact chassis has USB 2.0 plus serial ports, and fits just about anywhere, even on the back of a flat-panel display. C10LE includes powerful multimedia support in hardware.

The Wyse V10LE™ thin client is a more powerful and expandable client, with broad support for rich multimedia applications, USB 2.0, PS/2, serial, and parallel type peripherals, digital or analog displays and optional integrated smartcard or wireless networking.

The Wyse V10L Dual-DVI™ thin client is the first thin client to support dual DVI-I video outputs, supporting two digital or analog displays for excellent visual uniformity and increased workspace.

Check For New Models at wyse.com/products

Wyse Linux V6™, and Wyse Enhanced SUSE Linux Enterprise – In partnership with Novell

For groups running HDX, PCoIP or RDP who also need a local Firefox browser, terminal emulation*, and local open-source applications, our Linux offerings include the powerful Wyse Linux V6 and new SUSE Linux Enterprise-based family. These adaptable thin clients provide the same management and configuration benefits of Wyse ThinOS, and can be enhanced with add-on functionality, have built-in virus resistance, and a simple connection manager dashboard.

The Wyse C50LE™ thin client (with Wyse Enhanced SUSE Linux Enterprise) is one of the smallest, Linux-based thin clients on the market. The functional and compact chassis has USB 2.0 plus serial ports, and fits unobtrusively on or under a desk, or can be easily mounted on a wall.

The affordable Wyse V50LE™ (with Wyse Linux V6) include a powerful CPU; optional smart card slot; optional internal wireless networking, optional CardBus/ PCMCIA slot; plus serial, parallel, PS/2, and USB 2.0 ports.

The Powerful Wyse R50L™ thin client and more powerful Wyse R50LE™ (both with Wyse-enhanced SUSE Linux Enterprise) introduce a new level of CPU and graphics capability, with a powerful superscalar CPU independent graphics processor and dual DVI outputs, optional internal Wi-Fi b/g/n and Bluetooth wireless networking, plus serial, PS/2, and six USB 2.0 ports. The Wyse R50LE thin client adds PCI Express slot expansion, and parallel port.

Check For New Models at wyse.com/products

*Terminal emulation options via Ericom - PowerTerm® Terminal Emulation

Wyse-enhanced Microsoft Windows CE

For those organizations that need to run a basic local browser and terminal emulation in addition to ICA and RDP, we suggest the powerful, Wyse-enhanced Microsoft Windows CE operating system. This operating system gives administrators increased flexibility and performance, with the simplicity that Windows CE is known for. It allows IT managers to take advantage of the ability to switch easily and rapidly between a PC-like desktop and connection manager dashboard, plus the many supported peripherals and add-ons available.

The NEW Wyse C30LE™ client combines small size and big performance in an affordable Windows CE 6-based client. Includes a 1GHz CPU married to a powerful hardware video decoder for outstanding HD video playback. Includes Gigabit Ethernet, 2 PS/2 ports, 4 USB 2.0 ports, and DVI-I video port for 1 or 2 displays. Optional internal Wi-Fib/g/n with high gain antenna available.

The Wyse V30LE™ thin client provides a more powerful CPU, plus serial, parallel, PS/2, and USB ports and options including a smart card reader, internal wireless networking, and CardBus/ PCMCIA slot.

Check For New Models at wyse.com/products

Wyse-enhanced Microsoft Windows Embedded

When you need the latest RDP 7 and HDX support, a full version of Internet Explorer as a local browser, require specialty peripherals, or need the latest 32-bit Windows compatibility, Wyse-enhanced Microsoft Windows Embedded clients are excellent choices. This flexible, customizable, and robust thin computing operating system can fit the most demanding business computing requirements. Wyse Windows Embedded-based thin computers can run 32-bit Windows applications, either locally or from servers located on the network.

The NEW Wyse C90LEW™ client combines small size and big performance in an affordable Embedded-based client. Includes a 1GHz CPU married to a powerful hardware video decoder for outstanding HD video playback. Includes Gigabit Ethernet, 2 PS/2 ports, 4 USB 2.0 ports, and DVI-I video port for 1 or 2 displays. Optional internal Wi-Fi b/g/n with high gain antenna available.

The Wyse V90LE™ thin client provides a more powerful CPU for broad multimedia decoding, plus serial, parallel, PS/2, and USB ports and options including a smart card reader, internal wireless networking, and CardBus/PCMCIA slot.

Wyse R90LW™ thin client and Wyse R90LEW™ (both with Windows Embedded Standard) include Microsoft's next generation of Windows Embedded - powerful, extensible and yet maintaining full backward compatibility with previous software and hardware. Includes the latest RDP (version 7), HDX and VMware View PCoIP support.

Check For New Models at wyse.com/products

MOBILE THIN CLIENTS

For the mobile user, Wyse offers mobile thin clients that work from the office, to the conference room, to the field, to home. Based on Wyse-enhanced Microsoft Windows Embedded or Wyse-enhanced SUSE Linux Enterprise, choose from five models with a choice of screen size, weight, security and connectivity options. And because these Wyse mobile thin clients are designed for access to applications that are fully managed in the data center, they contain no HDDs, and are inherently more secure from theft, viruses and other malicious software attacks.

The Wyse X90cw ™ (Windows Embedded) mobile thin clients are ultraportable, multimedia capable, mobile thin clients. The first mobile thin clients to support multimedia video playback capability, USB port virtualization, a 11.6-inch LCD wide screen, and 802.11b/g/n.

The Wyse X50L™ (Wyse-enhanced SUSE Linux Enterprise) mobile thin client is a desktop replacement, multimedia capable, Linux-based mobile thin client. 15.4" Widescreen WXGA TFT LCD screen provides large viewing area. Simplified management, support for local open source applications and Firefox browser complete the picture.

The Wyse X90L™ and Wyse X90Le™ (Windows Embedded) mobile thin clients are desktop replacement, multimedia capable, mobile thin clients. 15.4" Widescreen WXGA TFT LCD screen
provides large viewing area. Mobility away from the office or Wi-Fi is accomplished by selecting an Express Card from local wireless network providers. The Wyse X90Le mobile thin client adds integrated Bluetooth™ 2.0 and smart card reader.

CLIENTS FOR STREAMING

The next generation of flexibility, security and ease of management, Wyse clients for Streaming contain no operating system software on the device, but instead use OS and Application Virtualization via Streaming to deliver a true PC experience with thin computing benefits of centralized storage, control, and simplified OS and application maintenance. The true PC OS and applications are literally delivered in real-time over the LAN from Wyse's provisioning software (Wyse WSM™) in the datacenter. Wyse clients can be provisioned with operating systems and applications compatible with Windows Embedded, Windows XP Professional, Vista, and Windows 7. This combination works perfectly stand-alone or in combination with Citrix, Microsoft or VMware-based virtualization technology, and provides IT the discretion to execute applications that won't run on the server on the desktop, just like a PC, while avoiding the management issues associated with a typical PC.

The NEW Wyse COOLE™ combines small size and big performance in an affordable unit. Includes a 1GHz CPU married to a powerful hardware video decoder for outstanding HD video playback. Includes Gigabit Ethernet, 2 PS/2 ports, 4 USB 2.0 ports, and DVI-I video port for 1 or 2 displays.

The Wyse VOOLE™ clients provide a 1.2GHz CPU, plus optional smart card slot, CardBus/PCMCIA slot, and serial, parallel, PS/2, and USB 2.0 ports. These clients require no management and can be provisioned with a range of embedded or standard operating systems and applications, providing the most flexible desktop platform for presentation or client virtualization environments.

Scorching performance with Wyse ROOL™ and more expandable Wyse ROOLE™ with a new level of CPU and graphics capability, with a powerful superscalar CPU; independent graphics processor and dual DVI outputs, HD video playback, plus serial, PS/2, and six USB 2.0 ports. R90LE adds, PCI Express slot expansion, and parallel port.

Check For New Models at wyse.com/products

WYSE
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Wyse Infrastructure Software

WYSE INFRASTRUCTURE SOLUTIONS

Thin computing is designed to provide all the power of a PC to people at their desks, while giving IT all the management and control of a server-based enterprise solution. That means infrastructure management tools are needed in order to reduce the strain on the IT staff and to deliver the maximum benefit to everybody using thin computing and client virtualization.

PROVISIONING SOFTWARE

Wyse WSM™ 3

Wyse WSM is the first solution to use OS and application streaming to package and deliver the operating system and applications independently of one another to client and PC desktops, giving IT administrators the control they need to ensure the consistency of desktop software across the enterprise. Wyse WSM requires very little datacenter infrastructure, operates standalone, or complements existing presentation and client virtualization solutions, while dramatically reducing the storage space, IT time and expense of delivering and maintaining desktop software throughout an enterprise. By streaming the operating system and applications independently to a stateless client or PC and running them locally in memory, Wyse WSM enables virtually any Windows application to be run on the client just as it would on a traditional PC. Yet all files and applications reside in the data center, where they are much easier to back up, manage, and maintain. Because applications are streamed independently of the operating system, Wyse WSM enables customers to standardize operating system images across their organization and deliver applications based on user roles and responsibilities. Administrators can also easily provision new applications or updates to existing applications without having to modify the operating system image.

MANAGEMENT SOFTWARE

Wyse Device Manager™

Wyse Device Manager software simplifies IT management, reduces TCO, and improves ROI by centrally controlling a world of intelligent devices — local and remote, wired, desktop, and mobile. From one console, you can use Wyse Device Manager to control, upgrade, protect, and repurpose up to thousands of clients – from Wyse and others. Wyse Device Manager optimizes network bandwidth during software distribution operations, provides manual and automatic discovery of network-attached devices, and performs scheduled updates with its powerful and easy-to use scheduling and device grouping capabilities. This gives network administrators the performance and flexibility they need to manage thin devices on the network. Using web-services technology, Wyse Device Manager is easy to use from anywhere on the network. Additionally, the Wyse Professional Services team is available to work with your unique requirements to ensure a successful implementation and smooth rollout of Wyse Device Manager.

VIRTUALIZATION SOFTWARE WITH WYSE COLLABORATIVE PROCESSING ARCHITECTURE™

A Wyse Exclusive - Wyse offers innovative software that enhances the user experience with today's presentation and client virtualization software solutions. Wyse virtualization software is built in to Wyse thin clients and addresses limitations previously found in thin computing, enhancing the user experience, reducing network bandwidth needs, and expanding server scalability.

WYSE TCX SUITE 4

Wyse's solution for the best user experience ever, even when the user is thousands of miles away from the cloud or datacenter. This software suite is built into Wyse thin clients, and available for supported PCs. It adds key functionality to the popular ICA/HDX, PCoIP and RDP thin computing protocols. TCX includes functionality in these key areas:

Multi-display

Multimedia and Flash

USB Peripherals

Bi-directional Sound

For more information on the different infrastructure solutions, please visit **wyse.com** today.

WYSE VIRTUAL DESKTOP ACCELERATOR

Wyse Virtual Desktop Accelerator is a breakthrough software technology that improves user experience when the client device is far from the datacenter. Without any additional hardware, this product neutralizes the effects of network latency and packet loss, improving HDX and RDP protocol performance up to 20X.

WYSE POCKETCLOUD

Need complete access to a cloud, your PC, Remote Desktop Services, a Terminal Server, VMware View or virtual machine from the palm of your hand? With Wyse PocketCloud™, it's no problem! Wyse PocketCloud allows you to securely access your desktop anytime and anywhere on your iPhone, iPod touch or iPad. **Available now on the iTunes App Store.**

WYSE PC EXTENDER

Have PCs that you'd like to use with virtualization, but want to reduce management, security risk, and complexity? Wyse PC Extender software installs on modern PCs, replacing their prior operating system, turning them into more secure, easier to manage thin clients, with support for the key protocols from Citrix, Microsoft and VMware. With Wyse PC Extender, you can extend the life of PCs while you prepare to replace them with thin clients. Uses the same software used in Wyse thin clients, so the transition to thin clients is a snap for IT and users.

For more information on the different infrastructure solutions, please visit **wyse.com** today.

People are talking...

HEALTHCARE:

Norton Healthcare

"Thin clients are the most effective, affordable way for us to meet our goal of leveraging MEDITECH to deliver better patient care, more efficiently. If we'd had to roll [it] out with only PCs to access the application, we wouldn't have been able to deploy nearly as many computers, restricting staff's ability to leverage the system to optimize patient care. With their cost savings and low ongoing maintenance needs, Wyse thin clients have helped us – and our patients – benefit fully from our switch to electronic medical information management."

Brian Cox, Director, IT Customer Service, Norton Healthcare

Kool Smiles

"We knew we'd need to hold down the expense of supporting our IT infrastructure, and with Wyse, we struck gold. Thin clients have helped us optimize the productivity of our staff, and saved us huge sums we'd otherwise have had to spend on hardware, software, and support for PCs. They also helped us to start small and scale our systems to match our rapid growth, without incurring major expense or requiring painful transitions."

Mark Blomquist, Chief Technical Architect and Co-founder, Kool Smiles

CALL CENTER:

InfoCision

The compact Wyse S30, based on Windows Embedded CE, provided InfoCision with an economical initial purchase cost, as well as ongoing savings thanks to lower operating and support costs. Instead of sending a team of up to six technicians to remote call center sites to perform upgrades, the company now manages all of the workstations remotely with a single support person. "The solution has already reduced operating and technical support costs by nearly 75 percent."

Michael White, CTO, InfoCision

TRANSPORTATION:

Regional Transportation District, Denver, CO

"Economically, the total cost savings of owning thin clients compared to PCs is impossible to ignore," says Ratcliff. "Environmentally, our sustainability committee was impressed by the energy efficiencies and subsequent reduction in carbon emissions that we could gain by deploying thin clients. And our users are happy with the way the Wyse thin clients help them meet the needs of our riders."

Trent Ratcliff, IT Infrastructure Manager, RTD

GENERAL BUSINESS:

Reed Specialist Recruitment

With day to day productivity a key concern for the Australian business, Rosa Scaffidi, IT Manager at Reed, explained why Wyse thin clients were selected during this phase, "We ran a trial of thin clients and Wyse was the front runner due to the speed of the boot-up and the easy-to-use management software. Also we had confidence in the brand and the long term support Wyse could offer."

Rosa Scaffidi, IT Manager, Reed

EDUCATION:

Danbury Public Schools

"It wasn't the upfront cost of PCs that made us turn to virtual desktops; the prices of PCs continue to drop and are seemingly attractive," according to Sklyar. "The long-term implications of PC upkeep, however, are substantial. You could offer me an entire fleet of free PCs and it still wouldn't make sense economically. The maintenance costs over time are too much to bear. Our biggest challenge is to make sure our technology infrastructure works. Thin clients help me assure that."

Yevgeniy Sklyar, Infrastructure Manager, Danbury Public Schools

Minnetonka Public School District

"We've stretched our technology budget to provide four times more computers in classrooms than we could otherwise have afforded. We're proud of the way we've delivered our students and taxpayers an astonishingly high return on their investment in education. We couldn't have done it without Wyse thin computing."

Julie Carter, Executive Director of Technology, Minnetonka Public School District

Rockhurst University

"Our thin-client implementation has achieved its goals and exceeded our expectations. Thin clients helped us meet our students' needs by delivering greater availability, quieter working conditions, and reduced environmental impact. At the same time, they freed our IT staff to do more innovative work, and saved us money we used to spend on PC hardware and maintenance so that we can deliver greater value and new services that keep us attractive to the best students and world-class faculty."

Michael Stancliff, Network Analyst, Rockhurst University

Vestby Kommune

"The Wyse solution provides each student with a unique personal profile, allowing them to access specific applications and course work online. It also allows them to access their profile from home, making homework more productive," according to Lars Peter Lilleng, ICT Manager for Education and Vestby teacher. "The project has had a great environmental impact as well. In a recent review of power consumption for the municipality schools, it was estimated that the switch to thin computing has delivered an 80% reduction in power usage and cut the annual power costs by over £17,500."

Lars Peter Lilleng, ICT Manager for Education and Teacher, Vestby Kommune

GOVERNMENT:

North Tyneside Council

"The Wyse solution fit our exact requirements and the Wyse technology is now a key element of our new IT infrastructure. We take our responsibilities to protect data extremely seriously. The new Wyse thin client infrastructure is another important line of defense that further minimizes the risks for the council."

Mick Preston, IT Project Team Leader, North Tyneside Council

TRUST THE EXPERTS IN THIN COMPUTING

As the global leader in thin computing, Wyse and our partners understand the needs of both industry and the public sector, as well as the demands each places on technology. Our entire line of clients is compatible with Citrix XenApp, XenDesktop, VMware View, Microsoft Terminal Services and Hyper-V. When you're ready to improve information access and simplify management, turn to the one company totally focused on delivering thin-computing solutions on your choice of server hardware. Nobody understands thin computing like Wyse. And we'll prove it to you.

To start deploying thin computing in your offices, call Wyse or your local value-added reseller. For more information on thin computing, visit our website at **wyse.com** today. Or call Wyse now at **1-800-GET-WYSE**.

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